

Appl. No. 10/679,968
Amdt. dated August 2, 2004
Reply to Office Action of May 20, 2004

Amendments to the Specification:

[0029] Figures 1 and 5 shows a first embodiment of an elongated, longitudinally curved, ceiling panel 1 of this invention. The ceiling panel 1 is made of sheet metal, preferably aluminum. The ceiling panel 1 has two upstanding lateral side flanges 3, only one of which is visible in Figure 1. A plurality of stress-reduction open and closed apertures 5 or only closed apertures, each preferably with a generally V-shape, are punched out of each upstanding lateral side flange 3. The upper-most stress-reduction apertures 5 in each upstanding lateral

[0031] Figure 2 shows a pattern of generally V-shaped open and closed stress-reduction apertures 5 in the upstanding lateral side flanges 3 of the ceiling panel 1. The apertures 5 provide increased longitudinal deformability of the flanges 3 and serve to relieve the stress on the ceiling panel 1 caused by bending and curving it to its final longitudinally curved configuration. In this regard, it is believed that the apertures 5 can adapt to elongations in length where the metal of the flanges 3 is stretched and can also accommodate reductions in length where the metal of the flanges 3 is compressed. This effectively results in canceling out the forces of longitudinal curving on the metal of the entire ceiling panel 1 and forming it with a flaw-free smooth curved central portion. 9

[0035] Figure 3 shows a flat metal sheet 15 with the open and closed stress-reduction apertures 5 punched in its lateral margins, prior to bending and curving the sheet 15 into the ceiling panel 1 of Figure 1 with the transversely profiled cross-section of Figure 5. The method used for providing the apertures 5 in the lateral margins of the metal sheet 15 is not believed to be critical, and conventional metal punching techniques can be used.

[0038] Figure 7 shows a mounting bracket 40 which can be used to suspend the ceiling panels 1a and 1b having only closed apertures 5 from a conventional supporting structure (not shown). Surprisingly, the lateral side flanges 3 of the ceiling panel of this invention, despite their curvature, can be securely held and supported by the bracket 40. The bracket 40 has a generally inverted, U-shaped body 42 with a pair of downwardly directed, substantially parallel legs 44 and 46. Clamping screws 48 and 50 are received in one of the legs 46 and can be screwed towards and away from the other leg 44, so as to grip securely, between the screws 48 and 50 and the other leg 44, the flanges 3a and 3b of a pair of adjacent ceiling panels 1a and 1b. The web of the U-shaped body 42 is provided with a slot 52, which can be engaged by a conventional adjustable ceiling hanger 54 as described, for example, in GB 1 567 716. It is believed that the gripping force exerted on the flanges 3a and 3b by the clamping screws 48, 50 is substantially enhanced by the presence of the plurality of stress-reduction apertures 5 in the flanges. However, it is believed that the use of the bracket 40 is not limited to the curved ceiling panels of this invention and that it can also be used advantageously to hold straight ceiling panels on supporting structures.

[0040] The ceiling panel 101 has a pair of upturned lateral side flanges 103, connected by beveled edge portions 107 to opposite sides of its central portion 109. At the top of

Appl. No. 10/679,968
Amdt. dated August 2, 2004
Reply to Office Action of May 20, 2004

each lateral side flange 103 is an outwardly turned bead 156 with a downwardly turned rim 158 at the end of the bead 156. A plurality of stress-reduction open and closed apertures 105 of this invention, preferably with a generally V-shape, are provided in the lateral side flanges 103 and preferably also in their outwardly turned beads 156 and downwardly turned rims 158. In this regard, it is preferred that the stress-reduction apertures 105 be punched in the lateral margins of the flat metal sheet 15 of Figure 3 before bending and curving the sheet into the ceiling panel 101, with its apertured flanges 103, beads 156 and rims 158, using, for example, the roll-former 20 of Figure 4.